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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,216	01/30/2004	Canfeng Lai	A5152D5/T39550	9570

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TOWNSEND AND TOWNSEND AND CREW LLP / AMAT  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834

EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT PAPER NUMBER

1763

DATE MAILED: 07/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/769,216

Applicant(s)

LAI ET AL.

Examiner

Luz L. Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 4/18/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 41-45 and 53-56 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-45 and 53-56 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Oath/Declaration***

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:  
Non-initialed and/or non-dated alterations have been made to the oath or declaration (see the citizenship of the first inventor). See 37 CFR 1.52(c).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 41-44 and 53-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al., US 5,565,249 in view of Kurihara et al. U.S. Patent 5,368,897.

Kurihara et al. '249 discloses the invention as claimed including a plasma torch comprising: an outer nozzle 2c/53c disposed substantially symmetrically about a center axis of the outer nozzle; an inner nozzle 2b/53b disposed within the outer nozzle and substantially symmetrically about the center axis, the inner nozzle including a conduit passing through the inner nozzle from an inlet side toward an outlet; a toroidal transformer core 11 disposed within the inner nozzle and surrounding the conduit; and a bypass defined by space between the outer nozzle and the inner nozzle, the bypass providing a return path for a secondary plasma current circuit around the toroidal transformer core; wherein the inner nozzle comprises metal and further includes a dielectric spacer 10 in the inner nozzle that separates an inner nozzle inlet-side portion and an inner nozzle outlet-side portion (see, for example, figs. 3 and 12 and their descriptions).

Kurihara et al. '249 does not expressly disclose that inner nozzle includes a conduit passing substantially linearly through the inner nozzle. However, the configuration of the claimed conduit is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed conduit is significant. Additionally, Kurihara et al. '897 discloses an outer nozzle 104 disposed substantially symmetrically about a center axis of the outer nozzle, an inner nozzle 103 disposed within the outer nozzle and

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substantially symmetrically about the center axis, the inner nozzle including a conduit 109 passing substantially linearly through the inner nozzle along the center axis (see, for example, fig. 19 and its description). Therefore, in view of this disclosure it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Kurihara et al. '249 as to comprise a conduit passing substantially linearly through the inner nozzle because such conduit shape/structure is suitable for generating a uniform plasma.

With respect to claim 43, note that Kurihara et al. '249 discloses that the conduit is fluidically coupled with a first gas source; and the bypass is fluidically coupled with a second gas source, the first gas source providing a different gas than the second gas source (see, for example, figs. 3 and 12, col. 9, lines 13-19 and col. 20, lines 13-14).

With respect to claim 44, Kurihara et al. '249 further discloses the use of different gas sources including a gas source that comprises hydrogen and a gas source that comprises oxygen (see, for example, col. 7-lines 53-58 and col. 8-lines 1-4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Kurihara '249 as to fluidically coupled the hydrogen source to the bypass and the oxygen source to the conduit if the method desired to be performed in the apparatus requires it (note that the conduit and the bypass in the apparatus of Kurihara et al. '249 are capable of being connected the claimed gas sources). Also, the coupling of a specific gas source to the conduit and the bypass is considered to be a method limitation instead of an apparatus limitation and since an apparatus is being claimed as the instant invention, the method teachings are not

considered to be the matter at hand, since a variety of methods can be done with the apparatus. The method limitations are viewed as intended uses which do not further limit, and therefore do not patentably distinguish the claimed invention, and as stated above, a) Kurihara et al. '249 discloses the claimed gas sources, and b) the conduit and bypass of the apparatus of Kurihara et al. '249 are capable of being coupled to the claimed gas sources if the method desired to be performed in the apparatus requires it.

With respect to claims 53-54, the configuration of the claimed outer nozzle and the claimed outlet-side portion of the inner nozzle is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed outer nozzle and the claimed outlet-side portion of the inner nozzle is significant.

With respect to claim 55, a prima facie case of obviousness still exists because it would have been obvious to one of ordinary skill in the art to rearrange the location of the toroidal transformer core during routine experimentation depending upon, for example, the desired location to generate the plasma, and such limitation would not lend patentability to the instant application absent the showing of unexpected results. Also, note that rearrangement of parts was held to have been obvious. *In re Japikse* 86 USPQ 70 (CCPA 1950).

With respect to claim 56, note that the apparatus of Kurihara et al. '249 modified by the teachings of Kurihara et al. '897 would comprise a conduit that is substantially cylindrically symmetric about the center axis.

Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al., US 5,565,249 in view of Kurihara et al. U.S. Patent 5,368,897, as applied to claims 41-44 and 53-56 above, and further in view of Smith et al., US 6,150,628.

Kurihara et al. is applied as above but does not expressly disclose the claimed primary coil. Smith et al. discloses a toroidal transformer core to which a primary coil is coupled (see, for example, fig.1 and its description, col. 2, lines 55-57, col. 4, lines 20-22 and 44-46). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Kurihara et al. as further comprise the primary coil in order to couple electro-magnetic energy to the core. Note that the apparatus of Kurihara et al. modified by Smith et al. will comprise a primary coil and a toroidal core enclosed within the inner nozzle.

Claims 41-44 and 53-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al., US 5,368,897 in view of Kurihara et al., US 5,565,249.

Kurihara et al. '897 discloses the invention substantially as claimed including a plasma apparatus comprising: an outer nozzle 104 disposed substantially symmetrically about a center axis of the outer nozzle; an inner nozzle 103 disposed within the outer nozzle and substantially symmetrically about the center axis, the inner nozzle including a conduit 109 passing through the inner nozzle from an inlet side toward an outlet, wherein the conduit is substantially cylindrically symmetric about the center axis; and a

bypass 105 defined by space between the outer nozzle and the inner nozzle; wherein the inner nozzle comprises metal (see, for example, fig. 19 and its description).

Kurihara et al. '897 does not expressly disclose a toroidal transformer core disposed within the inner nozzle and surrounding the conduit, and a dielectric spacer in the inner nozzle that separates an inner nozzle inlet-side portion and an inner nozzle outlet-side portion. Kurihara et al. '249 discloses a plasma apparatus comprising an outer nozzle 2c/53c, an inner nozzle 2b/53b including a conduit passing through the inner nozzle from an inlet side toward an outlet side, a toroidal core 11 surrounding the conduit, and a dielectric spacer 10 in the inner nozzle that separates an inner nozzle inlet-side portion and an inner nozzle outlet-side portion (see, for example, figs. 3 and 12, and their descriptions). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Kurihara et al. '897 as to further comprise the claimed inner nozzle/toroidal core/dielectric spacer structure in order to generate a uniform magnetic field in order to optimize the apparatus and/or the process performed in the apparatus. Furthermore, note that the apparatus of Kurihara et al. '897 modified by Kurihara et al. '249 would comprise a bypass that provides a return path for a secondary plasma current circuit around the toroidal transformer core.

With respect to claim 43, Kurihara et al. '897 discloses that the conduit is fluidically coupled with a first gas source and the bypass is fluidically coupled with a second gas source, the first gas source providing a different gas than the second gas source (see, for example, fig. 19, and col. 13, lines 17-19).

With respect to claim 44, Kurihara et al. '897 does not expressly disclose the claimed gas sources. Kurihara et al. '249 discloses the use of different gas sources including a gas source that comprises hydrogen and a gas source that comprises oxygen in diamond production processings (see, for example, col. 7-lines 53-58 and col. 8-lines 1-4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Kurihara '897 as to fluidically coupled an hydrogen source to the bypass and an oxygen source to the conduit if the method desired to be perform in the apparatus requires it since such gas sources are known to be used in the diamond production methods (note that the conduit and the bypass in the apparatus of Kurihara et al. '897 are capable of being connected the claimed gas sources). Also, the coupling of a specific gas source to the conduit and the bypass is considered to be a method limitation instead of an apparatus limitation and since an apparatus is being claimed as the instant invention, the method teachings are not considered to be the matter at hand, since a variety of methods can be done with the apparatus. The method limitations are viewed as intended uses which do not further limit, and therefore do not patentably distinguish the claimed invention, and as stated above, the Kurihara et al. apparatus modified by the teachings of Kurihara et al. '249 discloses the claimed gas sources, and the conduit and bypass of the apparatus of Kurihara et al. '897 are capable of being coupled to the claimed gas sources if the method desired to be perform in the apparatus requires it.

With respect to claims 53-54, the configuration of the claimed outer nozzle and the claimed outlet-side portion of the inner nozzle is a matter of choice which a person

of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed outer nozzle and the claimed outlet-side portion of the inner nozzle is significant.

With respect to claim 55, a prima facie case of obviousness still exists because it would have been obvious to one of ordinary skill in the art to rearrange the location of the toroidal transformer core during routine experimentation depending upon, for example, the desired location to generate the plasma, and such limitation would not lend patentability to the instant application absent the showing of unexpected results. Also, note that rearrangement of parts was held to have been obvious. *In re Japikse* 86 USPQ 70 (CCPA 1950).

Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al., US 5,368,897 in view of Kurihara et al., US 5,565,249, as applied to claims 41-44 and 53-56 above, and further in view of Smith et al., US 6,150,628.

Kurihara et al. '897 and Kurihara et al. '249 are applied as above but do not expressly disclose the claimed primary coil. Smith et al. discloses a toroidal transformer core to which a primary coil is coupled (see, for example, fig.1 and its description, col. 2, lines 55-57, col. 4, lines 20-22 and 44-46). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Kurihara et al. '897 modified by Kurihara et al. '249 as to further comprise the primary coil in order to couple electro-magnetic energy to the core. Note that the apparatus of Kurihara et al. '897 modified by Kurihara et al. '249

and Smith et al. will comprise a primary coil and a toroidal core enclosed within the inner nozzle.

### ***Response to Arguments***

Applicant's arguments with respect to claims 41-45 and 53-56 have been considered but are moot in view of the new ground(s) of rejection. Additionally, applicant's arguments with respect to the claim for benefit of the prior-filed application No. 09/839360 are persuasive, therefore, copendency between the applications has been established by the applicant.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

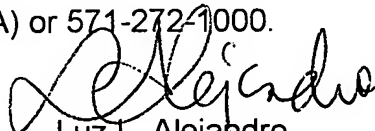
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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

July 5, 2006